

IN THE CLAIMS

1-41. (cancelled).

42. (original) Particulate alumina containing meta-periodate ions substantially homogeneously sorbed throughout the particles, wherein said meta-periodate ions are present in an amount of about 0.1 to about 0.15 molar in a gravity-settled volume of particles in deionized water.

43. (original) A process for removing iron, manganese, mercury and cobalt ions from a water supply that comprises the steps of:

a) contacting an aqueous solution that contains one or more of iron, manganese, mercury and cobalt ions in a concentration greater than about 2 parts per billion with modified alumina particles, said modified alumina particles containing meta-periodate ions sorbed substantially homogeneously distributed throughout in an amount of about 0.05 to about 0.15 molar as measured in a gravity-settled volume of particles in deionized water;

b) maintaining said contact for a time period sufficient for the one or more of said iron, manganese, mercury and cobalt ions present to be sorbed by the particles to form particles containing one or more of iron, manganese, mercury and cobalt, and an aqueous solution having a lessened amount of one or more of iron, manganese, mercury and cobalt ions; and

c) separating said formed particles containing one or more of iron, manganese, mercury and cobalt from said aqueous solution having a lessened amount of iron, manganese, mercury and cobalt ions.

44. (original) Particulate alumina containing iron substantially homogeneously sorbed throughout the particles, wherein said iron is present in an amount of about 0.1 to about 0.15 molar in a gravity-settled volume of particles in deionized water, said particles containing an oxidized iodine species and being substantially free of molecular iodine.

45. (original) Particulate alumina containing manganese substantially homogeneously sorbed throughout the particles, wherein said manganese is present in an amount of about 0.05 to about 0.075 molar in a gravity-settled volume of particles in deionized water, said particles containing an oxidized iodine species and being substantially free of molecular iodine.

46. (original) A process for removing arsenic or antimony +3 or +5 ions from a water supply that comprises the steps of;

a) contacting an aqueous solution that contains arsenic or antimony +3 or +5 ions in a concentration greater than about 2 parts per billion with modified alumina particles, said modified alumina particles containing iron or manganese, or both sorbed substantially homogeneously distributed throughout in an amount of about 0.05 to about 0.15 molar as measured in a gravity-settled volume of particles in deionized water, said particles also containing an oxidized iodine species and being substantially free of molecular iodine;

b) maintaining said contact for a time period sufficient for arsenic or antimony +3 or +5 ions present to be

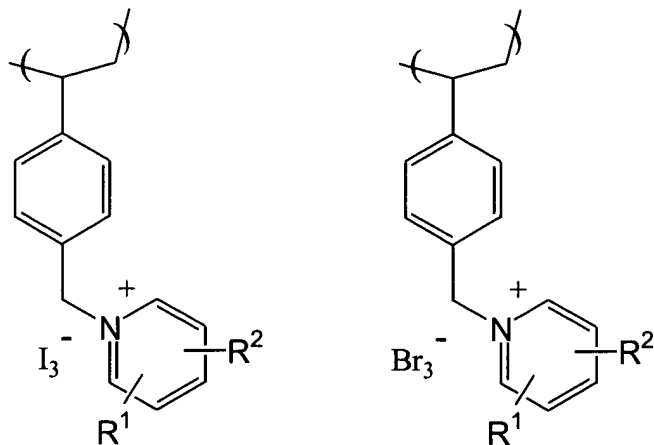
sorbed by the particles to form arsenic- or antimony-containing particles and an aqueous solution having a lessened amount of arsenic or antimony; and

c) separating said arsenic- or antimony-containing particles from said aqueous solution having a lessened amount of arsenic or antimony.

47. (original) The process according to claim 46 wherein said particles are modified with iron, and said iron is present in an amount of about 0.10 to about 0.15 molar.

48. (original) The process according to claim 46 wherein said particles are modified with manganese, and said manganese is present in an amount of about 0.05 to about 0.075 molar.

49. (original) The process according to claim 46 wherein prior to step (a), said aqueous solution is contacted with a water-insoluble polymeric medium having a plurality of polymerized N-pyridinium vinylbenzyl triiodide or tribromide moieties of the structure



wherein R^1 and R^2 are independently a hydrido or a C_1 - C_4 alkyl group;

maintaining said solution in contact with said insoluble medium for a time period sufficient for said trivalent arsenic or trivalent antimony in the influent to react with said oxidizing sites to form a pentavalent arsenic-containing or pentavalent antimony-containing sample solution and a reduced medium;

separating the pentavalent arsenic-containing or antimony-containing sample solution from the reduced medium; and

using the separated pentavalent arsenic-containing or antimony-containing sample solution as said aqueous solution of step (a).

50. (original) The process in accordance with claim 49 wherein said R^1 and R^2 substituents are both hydrido groups.

Please add new claims 51 through 55 as follows:

51. (new) An apparatus for removing bacteria and polyvalent metal ions from water that comprises:

a vessel having an inlet, an outlet and particulate alumina that contains meta-periodate ions substantially homogeneously sorbed throughout the particles, wherein said meta-periodate ions are present in an amount of about 0.1 to about 0.15 molar in a gravity-settled volume of particles in deionized water.; and wherein the particulate alumina is contained in an alumina holding region.

52. (new) The apparatus according to claim 51 wherein said vessel includes a first flow-permitting support positioned between the outlet and the alumina holding region.

53. (new) The apparatus according to claim 52 wherein said vessel includes a second flow-permitting support positioned between the inlet and the alumina holding region.

54. (new) The separation apparatus according to claim 53 wherein said inlet and outlet are separated from each other.

55. (new) The separation apparatus according to claim 54 wherein said the inlet and outlet are at opposite ends of the apparatus.